# The Contribution of Hospital Library Information Services to Clinical Care: A Study in Eight Hospitals

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ABSTRACT

Hospital health sciences libraries represent, for the vast majority of health professionals, the most accessible source for library information and services. Most health professionals do not have available the specialized services of a clinical medical librarian, and rely instead upon general information services for their case-related information needs. The ability of the hospital library to meet these needs and the impact of the information on quality patient care have not been previously examined. A study was conducted in eight hospitals in the Chicago area as a quality assurance project. A total of 176 physicians, nurses, and other health professionals requested information from their hospital libraries related to a current case or clinical situation. They then assessed the quality of information received, its cognitive value, its contribution to patient care, and its impact on case management. Nearly two-thirds of the respondents asserted that they would definitely or probably handle their cases differently as a result of the information provided by the library. Almost all rated the libraries' performance and response highly. An overview of the context and purpose of the study, its methods, selected results, limitations, and conclusions are presented here, as is a review of selected earlier research.

HOSPITAL PROGRAMS and services have come under close scrutiny in recent years. The increasingly competitive health care marketplace and concern for the quality of patient care have provided an impetus for careful examination of hospital services. But perhaps a more important motivation for administrative action are recent changes in the federal reimbursement systems for patient care and the expectation that similar models will be used by private insurers.

The hospital library has been particularly affected by the following events. A 1983 proposed rule of the Health Care Financing Administration, affirmed in 1984, eliminated the requirement that hospitals maintain a library in order to qualify for Medicare reimbursement [1,2]. In defense of that ruling, Dr. Edward Brandt, assistant secretary of health and human services, remarked that the need for a hospital library is not self-evident, and that if hospital staff need information, education is a more effective means for disseminating it than libraries [3]. Whatever the validity of Dr. Brandt's opinions (and there is ample evidence that education is not sufficient to meet the clinical information needs of practitioners [4,5]), Hardy, Yeoh, and Crawford suggest that it is now up to health sciences libraries to evaluate the impact of their services and assess their worth [6]. Because economic issues and the quality of patient care are closely linked, the contribution of the library to clinical care is an important yet neglected area for investigation.

Determining whether and how much libraries contribute to clinical care is difficult. Libraries do not routinely conduct evaluations of their impact, and a system for measuring outputs still needs to be devised. Hospitals have tried evaluating services and quality of care through quality assurance procedures [7–9], but the assessment techniques are either inappropriate when applied to the library or provide little insight into the effect of library services on patient care [10–12]. As a result, evaluations of health sciences libraries are uncommon. When undertaken, they typically address inputs, outputs, and operations (structure and process), with occasional attention to client satisfaction [13]. This information is both necessary and valuable for library decision making, and should be a part of library quality assurance assessments. Yet, the measures offer no direct evidence of either quality of service or impact on clinical care.

Assessments of the quality and effects of information services on patient care have, in recent years, commonly focused on specialized services to a limited clinical clientele, such as clinical medical librarian (CML) programs. CML services are admittedly more expensive than the standard information services for health sciences libraries.

Usually offered only in educational settings, they are available only to a small minority of clinical personnel, even in those hospitals enjoying their benefits. Nonetheless, because of their intensive attention to the information needs of the patient care team, CML services could represent the highest achievement in clinical information services by health sciences libraries. It might be assumed that these programs would perform at a higher level than standard information services, and that the information provided would have a greater potential impact on clinical decision making.

As noted above, the majority of health professionals do not have access to a clinical medical librarian. However, most hospitals with a library and qualified librarian do provide the more common general information services. The impact of standard information services on patient care in hospitals has not been investigated. To do so, librarians must evaluate the quality and effectiveness of their efforts.

## Review of the Literature

In a recent study of office practice information needs, Covell, Uman, and Manning found that about two questions concerning patient management arose for every three patients seen [14]. The authors did not attempt to analyze how many of the questions might have been answered by the literature, but the authors did find that practitioners overestimated the frequency with which they consulted the literature, and that they often encountered problems in locating and using it for patient care. Ideally, health professionals should be aware of or have ready access to the best published evidence to consider in clinical decision making. Unfortunately, studies have demonstrated a lack of awareness of published findings critical to quality patient care, indicating the problems health professionals have in remaining abreast of the literature [15].

Obstacles to case-related use of the literature by physicians are formidable and well documented [14,16–18]. A glut of information of varying quality complicates the task of remaining aware of and locating useful literature. Most physicians find time to read only a few journals relevant to their practice, and personal journal collections and reprint files are frequently uneven in coverage and poorly organized. Books and drug information sources are sometimes inadequately indexed. Perhaps more important, many practitioners experience difficulty formulating their questions in ways that facilitate finding answers. Visits to the library to search the literature cut into busy schedules and may disrupt patient care activities. The sources for needed information are often unknown or unavailable, and when published information is at hand, it is frequently incomplete, unreliable, or otherwise unhelpful.

The obstacles faced by nurses and other health professionals may be even more substantial than those faced by physicians. The need for information among these professionals may be just as great as that of physicians [19], but access to the literature more limited. Personal and departmental collections may be smaller and less convenient, and work schedules more rigid than those of physicians. Additionally, many of the allied health professionals do not share the research, publication, and reading traditions of medicine. As a result, there is a dearth of relevant and reliable literature.

The problems encountered by health professionals in obtaining published information for patient care are, of course, those that resources and services of health sciences libraries are intended to alleviate. Yet, studies reveal that libraries are not as heavily used for patient care information as might be anticipated. Stinson and Mueller, in a survey of the information needs and habits of health professionals, found that 19% never used their library and an additional 29% used it less than once a month [20]. Use of libraries to obtain information for direct patient care might be heavier in hospitals than in academic settings, but a study of the use of MEDLARS in thirty-eight New England hospitals revealed that less than half of its use was case-related [21]. A recent assessment by Kantor suggests that in all types of health sciences libraries only about 26 cents of the library dollar is consumed by those seeking information for direct patient care [22].

Some libraries have instituted new services to address the clinical information needs of their clientele. Of note are CML services. Evaluations of these programs reveal the potential impact of case-related use of literature provided through a service specifically designed to meet the information needs of a cohesive clinical team. In a study of the CML program at Yale Medical Library by Greenberg and colleagues, 14% of the clinicians surveyed indicated that the information provided by the librarian greatly altered or affected patient care, and only 7% replied that the information had no impact [23]. In a more recent study by Scura and Davidoff, 20% of the clinicians asserted that the literature provided by the clinical medical librarian directly influenced management of their cases

[24]. The authors also compared the efficiency and effectiveness of the CML service to other case-related information sources such as laboratory work, x-ray examination, and multiphasic screening programs. They found the CML service equally or more helpful in clinical decision making.

Most health care professionals do not have such customized services available, and rely instead upon the general information services of their health sciences library. It is important to inquire whether standard information services can meet the case-related information needs of clinical personnel, particularly in hospitals that are not served by large academic medical libraries. No studies of the contribution of hospital library information services to clinical decision making and patient care have been reported in the literature.

## Purpose of the Study

Early in 1985, librarians from nine hospitals in the Chicago area approached the University of Illinois Library Research Center (UILRC) for assistance in conducting research on the contribution of hospital library information services to quality patient care. The goal, as defined in an early meeting, was to "assess the ability of the hospital library to deliver, in a timely fashion, published information and library services which may be of value for clinical care." An acceptable research design would have definite constraints: the need to address the problem of evaluating the quality of information services, introduce as little disruption as possible into the routines of the libraries and health professionals, serve at least in part as a hospital quality assurance project, and yield reliable results.

The librarians from the nine hospitals formed the Illinois Health Science Libraries Research Group (IHSLRG), a joint committee of two hospital library consortia, to work out the details of the study with UILRC. The study was then carried out in each of the hospitals. Pursuant to the goal of assessing the performance and impact of library information services on patient care, five areas for investigation were identified. Within each area, specific questions to be answered provided focus for the study. The five areas were:

1. Quality of the information. Was it relevant to the clinical information needs of health professionals? Was it accurate and current?
2. Cognitive value of the information—that is, its contribution to the knowledge of health professionals. Did it refresh memory of details or facts pertinent to the case? Did it substantiate prior knowledge or belief as a foundation for confident clinical decision making? Most important, did health professionals obtain new knowledge from the information?
3. General impact of the information on the quality of patient care. Was the information of clinical value? Did it lead to better-informed clinical decisions? Did it contribute to higher quality patient care?
4. Impact of the information on case management. Did health professionals handle their cases differently as a result?
5. Performance of the library in providing the information. Was the information provided quickly enough to be of value for clinical decision making? Did library staff demonstrate the knowledge and ability required to meet clinical information needs? Where library staff cooperative in relationships with health professionals? What was the overall performance of the library in providing information-on-demand for patient care?

There were other basic questions to be answered by the study. Because many different health professionals make decisions that directly affect clinical care, the study had to include not only physicians, but also nurses and other members of the health care team involved. Considering this, the survey needed to determine if physicians, nurses, and other health care professionals differ in the types of information needed for clinical purposes. Do they place different value on the information? Does the information affect care decisions and practices in different ways? Do they differ in their use of the library and their judgments about library performance? Is there any relationship between the number of years in professional practice and either the value placed on published information or judgments about the contribution of library information services?

It was decided at the outset that only the health professionals themselves were capable of assessing the contribution of the information to patient care. Moreover, since clinicians often find it difficult to distinguish between use of the library for educational, research, and clinical purposes, the research design focused only upon information requested for a specific case or clinical situation. Finally, in order for the results to be more objective, it was decided that librarians should not participate in the assessment process and should not be able to identify health professionals who were assessing their library.

One of the hospitals originally represented in the IHSLRG was not able to participate in the study. The eight participating hospitals range in size from 184 to 873 beds. All libraries met or exceeded the minimum standards established for hospital libraries by the Medical Library Association [25] and the Joint Commission for Accreditation of Hospitals [26]. However, as is evident in Table 1, the libraries differed considerably in number of titles owned, staffing, and budget.

## Methods

A questionnaire was jointly developed by UILRC and librarians represented in IHSLRG, pretested among clinicians and others within each of the participating hospitals, and revised by the UILRC to incorporate recommended improvements. The librarian from each hospital provided UILRC with a count of the health professionals in three categories: physicians, including medical residents; nurses, limited to registered nurses and nurse practitioners; and other health professionals involved in direct patient care, including therapists, psychologists, social workers, patient educators, and so on. Based upon the counts in each category, UILRC established sample sizes for each hospital: hospitals with less than 500 eligible health professionals were assigned a sample size of 30; hospitals with 500 to 1,000 health professionals, 40; and hospitals with more than 1,000 health professionals, 50. The total number of eligible health professionals at each hospital is noted in Table 1. The number of individuals to be selected from each of the three categories varied by hospital, according to group sizes. The overall sampling distribution for the study was 49% physicians, 40% nurses, and 11% other health professionals.

Each hospital designated a project representative not associated with the library. Positions held by hospital representatives varied; among them were quality assurance staff, personnel officers, continuing education directors, administrators, and clinicians. UILRC asked each hospital representative to generate lists of health professionals in the three categories, and to draw a random sample of names from each category equal to the preestablished group quotas. Hospital representatives contacted the individuals selected and asked them to participate in the hospital library quality assurance project. Persons who declined were replaced by the next individual named on the appropriate list. No record was kept of the number of health professionals who declined to participate, but hospital representatives said they had few refusals. In all, 310 health professionals agreed to participate in the study.

UILRC prepared a packet of materials for participants which contained a copy of the questionnaire, an explanation of the project, instructions to the participants, and a postage-paid pre-addressed envelope. Each packet was stamped with a unique identifying number corresponding to the identification code of the enclosed questionnaire. As hospital representatives distributed the packets to health professionals, they recorded the names of participants with the identifying numbers of the packets. The process of recruiting participants and distrib-

TABLE 1

Selected Characteristics of Participating Hospitals' Libraries

| Hospital | Number of clinical clientele* | Number of titles owned | | Number of F.T.E. staff | | Annual budget |
|---|---|---|---|---|---|---|
| | | Books | Journals | Librarians | Support | |
| A | 474 | 4300 | 350 | 1 | 2 | $ 97,965 |
| B | 866 | 2272 | 364 | 1 | 1.33 | 83,947 |
| C | 891 | 3500 | 246 | 1 | 3.5 | 111,000 |
| D | 880 | 5694 | 511 | 2 | 1.5 | 137,540 |
| E | 1673 | 4092 | 268 | 1.5 | 1.5 | 106,800 |
| F | 383 | 600 | 165 | 1 | — | 32,636 |
| G | 993 | 2000 | 265 | 2 | 1.33 | 100,000 |
| H | 972 | 536 | 191 | 1 | — | 53,700 |
| Mean** | 891 | 2875 | 295 | 1.3 | 1.4 | 90,449 |
| Median** | 885 | 2886 | 267 | 1 | 1.4 | 98,983 |

*Health professionals in the three categories are described in the Methods section.
**Means and medians are rounded to nearest whole number, except for full-time staff.

uting packets was spread over a period of weeks to minimize the impact of the project on the libraries.

Each health professional was instructed to select a current case or clinical situation for which further information might be useful, and to request the information from the hospital library. Participants were asked not to reveal their involvement in the study to library staff—a precaution intended to reduce the possibility of special handling of their information requests. After receiving a response from the library, they completed their questionnaires and mailed them directly to UILRC. UILRC in turn periodically notified hospital representatives of the questionnaires received and encouraged them to remind non-respondents about the project. Thus, the unobtrusive design of this study also ensured confidentiality of responses and virtual anonymity of participating health professionals. Hospital representatives knew the identity of participants, but never saw completed questionnaires; UILRC examined questionnaires, but could identify participants only by number; library staff did not see completed questionnaires and could not identify participating health professionals. In a debriefing session with hospital librarians, they affirmed that although they knew when the project was under way due to increased volume of information requests, they were unable to guess which requests originated from health professionals participating in the survey. This is an indication that not only was the method successful, but also that the information requests were typical of case-related requests encountered by the libraries.

The study took place during the winter and spring of 1986. Starting dates were staggered so that not all hospitals were active or at the same stage of the study at the same time. The study was terminated after four months in each hospital.

## Results

Of the 310 questionnaires distributed to the 8 hospitals, 184 responses were received by UILRC. Eight of the returned questionnaires were unusable. The remaining 176 questionnaires represent an overall response rate of 57%, but the rates of responses varied considerably by hospital. Response rates from three of the hospitals were very high, with 70% or more of the health professionals returning completed questionnaires. But less than one-fourth of the health professionals from one hospital responded. The two hospitals with the lowest response rates were those with libraries having the fewest titles, smallest staff, and least monetary support. Non-respondents from these hospitals might have answered the questionnaire quite differently from respondents, and it cannot be assumed that respondents from these hospitals are truly representative of all health professionals affiliated with the institutions. However, more confidence can be placed on the questionnaires received from hospitals with high response rates. ANOVA and chi-square tests of responses to individual questionnaire items revealed no statistically significant differences between hospitals with high response rates and those with low response rates. So, although respondents from hospitals with low response rates may not be representative of all health professionals within those institutions, they do share their assessments of the contribution of library information services to patient care with health professionals from the other hospitals.

One-half of the physicians and other health professionals surveyed returned completed questionnaires, and two-thirds of the nurses responded. As was true of overall response rates, the response rates of health professionals in the three professional categories varied by hospital. However, the overall distribution of respondents in the three survey groups is close to that established in the original sampling distribution: 90% of those returning questionnaires were physicians and nurses, with their numbers about equally divided, and the remaining 10% of the respondents were other health professionals.

Not every respondent answered every question. Results reported here reflect responses to individual questionnaire items. Since the number of other health professionals participating in the study was relatively small, responses from this group were occasionally combined with responses from the nurses for analysis, and are reported as allied health professionals. Due to space limitations, only selected summary findings are reported here.*

### *Health Professionals and Their Requests*

Twenty-two specialties and subspecialties were represented by the physicians. Most physicians were in general practice, in internal medicine or one of its subspecialties. Of the sixteen specialties and principal areas of practice reported by the nurses, most were in critical care or intensive care units, quality assurance, or medical or surgical nursing. A wide variety of specialties was found among the other health professionals in the study,

*For more complete information, contact the author.

including therapists, a dietitian, a pharmacist, and several psychologists and counselors.

The number of years in professional practice reported by the survey group differed significantly among respondents in the three survey categories ($p = .004$). The majority of the physicians reported either less than six or more than twenty-three years in practice. Most of the allied health professionals reported between six and seventeen years of professional experience. However, the mean years of professional experience did not differ greatly between groups, for the physicians it was 14.39; for the allied health professionals it was 13.67.

The physicians reported more frequent use of their hospital library than did the allied health professionals, as shown in Table 2. A much greater proportion of physicians affiliated with the eight hospitals reported using their library at least once a week during the past year than did allied health professionals. Most of the allied health professionals reported using their library less than once a week. The lowest frequency of use of the hospital library was reported by the nurses; over one-third indicated that they had used their library less than once a month during the previous year. The data were organized in various ways for analysis of responses to this questionnaire item; differences were consistently significant ($p \leq .017$).

Unlike the research results reported by Strasser, which suggest that recently trained physicians use libraries and the published literature more frequently than their more experienced colleagues, this survey found that the frequency with which participating health professionals use their hospital libraries was not related to the number of years in practice [19]. But significant differences were found between hospitals ($p = .018$). Health professionals reported more frequent library use in the hospitals with the most monetary and staff support. The hospital where respondents reported much less frequent library use is the hospital with the smallest collection and a single staff member. Hospitals that reported near-average frequency of library use were those providing average monetary and staff support for their libraries.

The information requests of the survey group represented a broad spectrum of clinical concerns. Information requested by the physicians concentrated primarily on diagnosis and treatment of specific diseases or disorders, most frequently about immunologic and related disorders and about cardiovascular diseases. The nurses and other health professionals presented a wider range of requests, expressing interest in the delivery and quality of care provided by hospitals (including issues like infection control and quality assurance), as well as information related to particular patient cases. The nurses and other health professionals more often requested information about psychological, behavioral, and social aspects of patient care than did the physicians—a finding similar to that reported by Strasser [19]. Clusters of questions occurred, but were not common: four queries were concerned with AIDS, three with diabetes mellitus, five with stroke, and three with pelvic inflammatory disease.

When submitting their information requests, 91% of the survey group expressed a preference for specific types of materials. Almost half (47%) requested a list of references or printout and copies of journal articles pertinent to their case. Although 18% indicated an interest in books, and 8% requested audiovisual materials, these types of materials were always requested in addition to references and articles. Only seven reported that they received fewer materials than requested. Nearly three-quarters (73%) received exactly what they had requested, and 20% received more materials than specified. Physicians, nurses, and other health professionals all reported similar preferences and results, and there was no evident relationship between types of materials requested or

TABLE 2

FREQUENCY OF HOSPITAL LIBRARY USE BY HEALTH PROFESSIONALS

| Frequency of Use | Physicians (N = 75) | Allied Health | | All (N = 176) |
|---|---|---|---|---|
| | | Nurses (N = 83) | Others (N = 18) | |
| Once a week or more often | 43 (57%) | 25 (30%) | 9 (50%) | 77 (44%) |
| At least once a month but not weekly | 22 (29%) | 30 (36%) | 7 (39%) | 59 (34%) |
| At least once last year but not monthly | 9 (12%) | 25 (30%) | 2 (11%) | 36 (20%) |
| Not at all last year | 1 (1%) | 3 (4%) | — | 4 (2%) |

received and either frequency of library use or number of years in professional practice.

### *Contribution of Information Received to Patient Care*

Assessments of the quality and cognitive value of information provided by the hospital libraries in response to the requests of participants, and its contribution to quality patient care, are presented in Table 3. The survey group was asked to assess the quality of the information they received based on accuracy, currency, and relevance to the case or clinical situation for which it had been requested. All but two of the responding health professionals judged the information to be accurate and current, and the great majority of respondents considered it relevant. In an evaluation of the CML program at Yale, which differed from this study because use of the service for non-clinical purposes was included in the evaluation, similar results concerning the relevance of the information were reported [23]. In the current study, although a smaller percentage of the other health professionals found the information relevant, and although there were differences in the respondents' assessments, the differences were not statistically significant.

Three of the questionnaire items were designed to determine how the information provided by the libraries contributed to the respondents' knowledge. Almost all of the respondents indicated that the information refreshed their memories of details or facts pertinent to the case. A slightly smaller percentage, but still a large majority, said that the information substantiated some prior knowledge or belief concerning the case. A smaller percentage of the other health professionals indicated that the information refreshed their memories or substantiated prior knowledge, but the differences in responses were not statistically significant.

Almost all of those surveyed asserted that they obtained new knowledge from the information. Similar results were reported by Scura and Davidoff in their study of CML services to house officers [24]. Although the current study reports differences between the responses of health professionals in three categories and eight hospitals, those differences were not statistically significant.

Three questionnaire items asked the survey group to assess the contribution of the information to quality patient care. All but four respondents indicated that the information was of clinical value. The result is similar to those reported by Schnall and Wilson, who studied CML services to physicians, nurses and other health professionals in a neonatal intensive care unit [27]. In the current study, the health professionals were also asked about the contribution of the information to patient care. Almost all of the respondents said that the information contributed to better-informed clinical decisions and higher quality care for their patients. Variations in the responses from the three professional categories and the eight hospitals were negligible. The nurses and other health professionals found the information provided by the library just as valuable for clinical purposes as did the physi-

TABLE 3

ASSESSMENTS OF INFORMATION BY HEALTH PROFESSIONALS*

| Assessment Criteria | Physicians | Allied Health | | All |
|---|---|---|---|---|
| | | Nurses | Others | |
| 1. *Quality* | | | | |
| Relevant | 61 (88%) | 69 (91%) | 13 (77%) | 143 (88%) |
| Accurate and current | 69 (99%) | 73 (99%) | 17 (100%) | 159 (99%) |
| 2. *Cognitive value* | | | | |
| Refreshed memory of details or facts | 68 (94%) | 73 (95%) | 15 (93%) | 156 (93%) |
| Substantiated prior knowledge or belief | 58 (83%) | 68 (88%) | 13 (72%) | 139 (84%) |
| Provided new knowledge | 70 (96%) | 74 (93%) | 16 (90%) | 160 (94%) |
| 3. *Contribution to quality patient care* | | | | |
| Information was of clinical value | 68 (99%) | 80 (96%) | 17 (100%) | 155 (98%) |
| Better-informed clinical decisions | 72 (99%) | 74 (97%) | 17 (94%) | 163 (98%) |
| Contributed to higher quality care | 70 (95%) | 74 (95%) | 16 (90%) | 160 (94%) |

*Not every participant responded to every question. Percentages are based on responses to each individual item.

cians, just as useful for clinical decision making, and equally valuable for quality patient care.

*Impact of Information on Case Management*

Assessing the impact of information on case management is difficult. In their evaluation of a CML program, Scura and Davidoff asked house officers whether the articles provided by the librarian affected patient management [24]. Twenty percent answered positively. Greenberg and colleagues asked clinicians whether the CML's information directly altered or affected patient care [23]. Fourteen percent answered "greatly" and 43% answered "moderately." Neither study revealed whether case management changed as a result. Although general queries about case management may be helpful, and although changes in case management may not occur even if the information is relevant and valuable, behavioral change by health professionals must be considered a strong indicator of the information's impact.

In the current study, the health professionals were asked: "As a result of the information you received from the hospital library, did (or will) you handle any aspect of this case or clinical situation differently than you would have handled it otherwise?" The responses to the question are presented in Table 4. Nearly three-quarters of the health professionals said that some aspect of case management would definitely or probably change and more than one-fifth asserted that they had or would definitely handle their cases differently. There were no differences between professional groups in their responses; the nurses and other health professionals were just as likely as the physicians to indicate a change in case management. There was no difference in the responses of more experienced health professionals compared to those with fewer years in practice. Frequent library users did not respond differently from infrequent users. And, although there were differences in the responses between the hospitals, they were not statistically significant.

*Library Performance*

Health professionals assessed the performance of their hospital libraries in providing the case-related information on the basis of four performance criteria: speed of service, knowledge and ability of library staff, cooperativeness of library staff, and overall opinion of the library's performance. Each criterion was rated on a six-point satisfaction scale. The ratings were doubled for analytical purposes; thus, the minimum rating was two and the maximum rating was twelve for each of the criteria. The results of the assessments appear in Table 5.

The participating health professionals were very satisfied with their library's performance. Most of the respondents were satisfied with the library's speed in acting on information requests; 62% gave their library a rating of twelve for speed of service. Most of the health professionals indicated satisfaction with the knowledge and ability demonstrated by library staff concerning their requests for information, with 58% assigning a maximum rating for this criterion. Almost all respondents were satisfied with the cooperativeness of library staff, with nearly three-quarters (74%) giving the highest possible rating. Similar responses to similar questions were reported by Greenberg and colleagues in their evaluation of a CML service [23]. In the current study, most of the health professionals were satisfied with the overall performance of their library in meeting their clinical need; 60% assigned a rating of twelve for overall library performance. No statistically significant differences were found between the ratings of respondents in the three professional groups or between hospitals, and no differences were evident between the ratings of frequent and infrequent library users. The number of years in professional practice was equally without influence on the assessments. Finally, it is

TABLE 4
IMPACT OF INFORMATION RECEIVED ON CASE MANAGEMENT

| Case Management (Respondent would handle case differently) | Physicians (N = 74) | Allied Health | | All (N = 173) |
|---|---|---|---|---|
| | | Nurses (N = 82) | Others (N = 17) | |
| Definitely | 16 (22%) | 17 (21%) | 5 (29%) | 38 (22%) |
| Probably | 41 (55%) | 41 (50%) | 8 (47%) | 90 (52%) |
| Probably not | 16 (22%) | 20 (24%) | 4 (23%) | 40 (23%) |
| Definitely not | 1 (1%) | 4 (5%) | —— | 5 (3%) |

TABLE 5
LIBRARY PERFORMANCE AS ASSESSED BY HEALTH PROFESSIONALS

| Performance Criteria | Dissatisfied (rating 2–4) | Neutral (rating 6–8) | Satisfied (rating 10-12) |
|---|---|---|---|
| 1. *Speed of service* | | | |
| Physicians* | 4 (5%) | 11 (15%) | 60 (80%) |
| Allied health | — | 13 (13%) | 88 (87%) |
| All | 4 (2%) | 24 (14%) | 148 (84%) |
| 2. *Knowledge and ability of staff* | | | |
| Physicians | 4 (5%) | 10 (13%) | 61 (81%) |
| Allied health | — | 14 (14%) | 87 (86%) |
| All | 4 (2%) | 24 (14%) | 148 (84%) |
| 3. *Cooperation of staff* | | | |
| Physicians | 4 (5%) | 1 (1%) | 70 (93%) |
| Allied health | 1 (1%) | 8 (8%) | 92 (91%) |
| All | 5 (3%) | 9 (5%) | 162 (92%) |
| 4. *Overall performance* | | | |
| Physicians | 4 (5%) | 5 (7%) | 66 (88%) |
| Allied health | — | 12 (12%) | 89 (88%) |
| All | 4 (2%) | 17 (10%) | 155 (88%) |

*For Physicians, N = 75; for Allied Health, N = 101; for All Professionals, N = 176.

noteworthy that no relationship was found between assessments of library performance and the effects of the information on case management. The respondents who did not intend to handle their cases differently rated the performance of their library just as highly as did respondents who did intend to alter case management.

## LIMITATIONS OF THE STUDY

Attempts were made in this study to address common problems in social science research. The unobtrusive design was intended to offset common sources of bias, thus, the emphasis on confidentiality, use of non-librarian project respresentatives, and random selection of health professionals to ensure participation by infrequent and non-users as well as regular patrons. The approach used in this study enabled the health professionals to make their judgments in terms of a single use of the services for a specific purpose, resulting in a more realistic assessment of performance than is usually provided by general opinion surveys. The participation of a variety of hospitals differing in size and resources permits comparison of the information services available to health professionals in different settings.

In spite of these strengths, the limitations of the study should not be overlooked. Only the general information services of hospital libraries, in their role of meeting specific clinical information needs, were considered. Other contributions of the libraries to patient care were not addressed. The hospitals which participated in the study were self-selected by the librarians at those institutions. Despite their variety, all of the hospitals are in a large urban/suburban setting, all have a trained and experienced librarian, all of the libraries meet MLA standards and JCAH criteria, and even the smallest among them has ready access to good resources through well organized consortia and close working relationships with larger libraries. The potential effects of these factors on results should be acknowledged. As Stinson and Mueller discovered in their research on health professionals' information needs and use, those in urban areas and those in institutional practices differed from those in rural settings or "solo" practices [20]. Similar factors may affect the quality and potential of information services in hospital libraries, the information needs of health professionals, and the results of this study.

Of more immediate concern, studies that rely entirely upon self-reported data rather than objectively verifiable observations are always questionable. Not only is it difficult to determine how accurate the former are, but non-respondents might differ substantially from respondents in their assessments. The replacement of health professionals who declined to participate in this study with other randomly selected individuals may, or may not, have partially offset the effects that typically result when participants are self-selected. Finally, the participation of UILRC may have influenced respondents. The possibility exists that some respondents may have answered the questionnaire items as they did in order to make their hospital and library look good. Given all these potentially biasing factors, the findings of this study cannot be generalized to all hospitals or all health professionals, and the results should be interpreted with considerable caution.

## CONCLUSIONS AND COMMENTS

In analyzing the study results, every effort was made to discern differences between respondents in the three professional groups and between hospi-

tals. The differences found were those that might be anticipated. The participating physicians reported using their hospital library more frequently than did the allied health professionals, and there were differences in the types of information requested from the libraries.

Perhaps more important were the differences that were not found. There were no differences between the physicians, nurses, and other health professionals in their assessments of the contribution of the information to patient care or its impact on case management. The allied health professionals were just as likely as the physicians to recognize the information's clinical value, and just as likely to handle their cases or clinical situations differently as a result. But the nurses and other health professionals more often commented on the availability of library services; they more often stated that they did not know they were permitted to use the library, and more often indicated that they did not know they could take advantage of library information services.

If clinical staff other than physicians do indeed make decisions important to quality patient care, if they find library information services just as useful as physicians do in clinical decision making, and if the services of hospital libraries have similar impact on case management decisions—as the results of this study suggest—the non- and infrequent use of libraries by these professionals becomes an important issue. Perhaps allied health professionals do not share the medical traditions of research, publication, and use of literature. Perhaps their work routines and schedules are less flexible than those of physicians. Perhaps they are less aware of circumstances in which the literature and library information services could benefit clinical decision making. But it may also be true that health sciences libraries have not yet developed services that are adequately responsive to the information needs of allied health professionals. Considering the renewed concern with the quality of hospital care in recent years, efforts to better understand and meet the clinical information needs of underserved professional groups may contribute to improved patient care. Such efforts could help extend and solidify the hospital library's support base.

Another area in which few differences were found was between hospitals. The hospitals and their libraries differed considerably in size. Smaller hospital libraries received more complaints about the inadequacy of their collections, but their information services were rated just as highly as were those of better supported hospital libraries, and the impact of the services on case management did not differ. This suggests that, at least with respect to information services for clinical care, the librarian may have been a more important element than the collection in the contribution of the library to patient care. Strong consortia and creative approaches to information services and document delivery may have offset collection deficiencies in this study. Whether the same level of performance might be found in hospitals without a full-time qualified librarian, or with libraries that do not meet MLA standards, or in less urban settings, are questions for further research.

This study did not directly address CML services, but selected results of this study have been compared with published evaluations of CML programs. The similarities are notable. The performance of information services in the eight participating hospitals equalled the performance of specialized CML services offered by larger, mostly academic, health sciences libraries in meeting the clinical information needs of their clientele.

General information services are the bread and butter of the profession. Many hospitals and organizations concerned with the quality of patient care and the libraries' information service role still equate libraries with collections. Far too few hospitals can boast of services to their clinical staff on the level demonstrated by hospitals participating in this study. Serious steps will be required to assure that quality information services are available to the majority of health professionals. The efforts of talented librarians, the refinement of information services to better meet the information needs of diverse clinical constituencies, and more research upon which planning for hospital library services can be based will help secure the place of hospital libraries in clinical decision making and quality patient care.

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